

Fig. 1

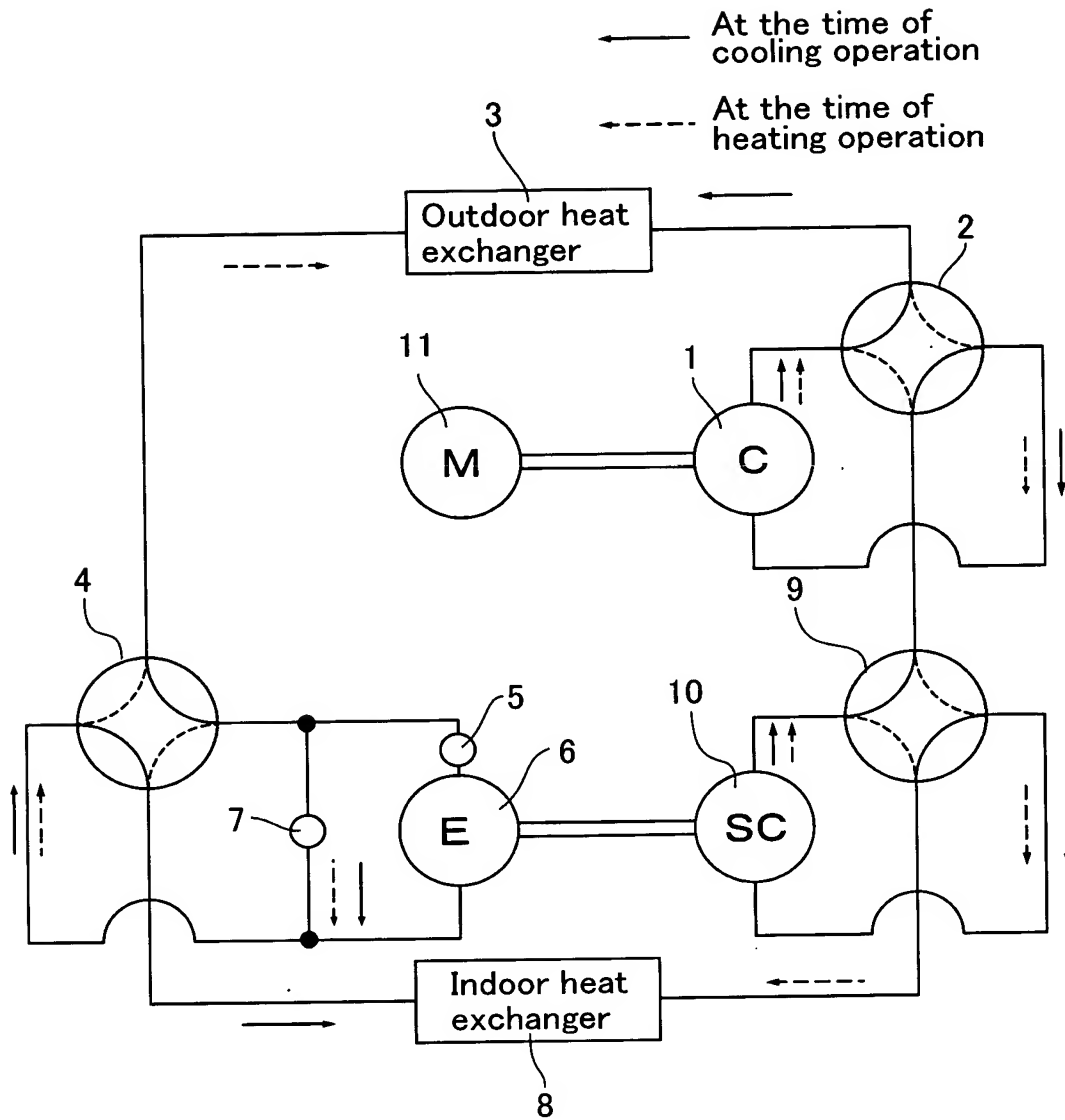


Fig. 2

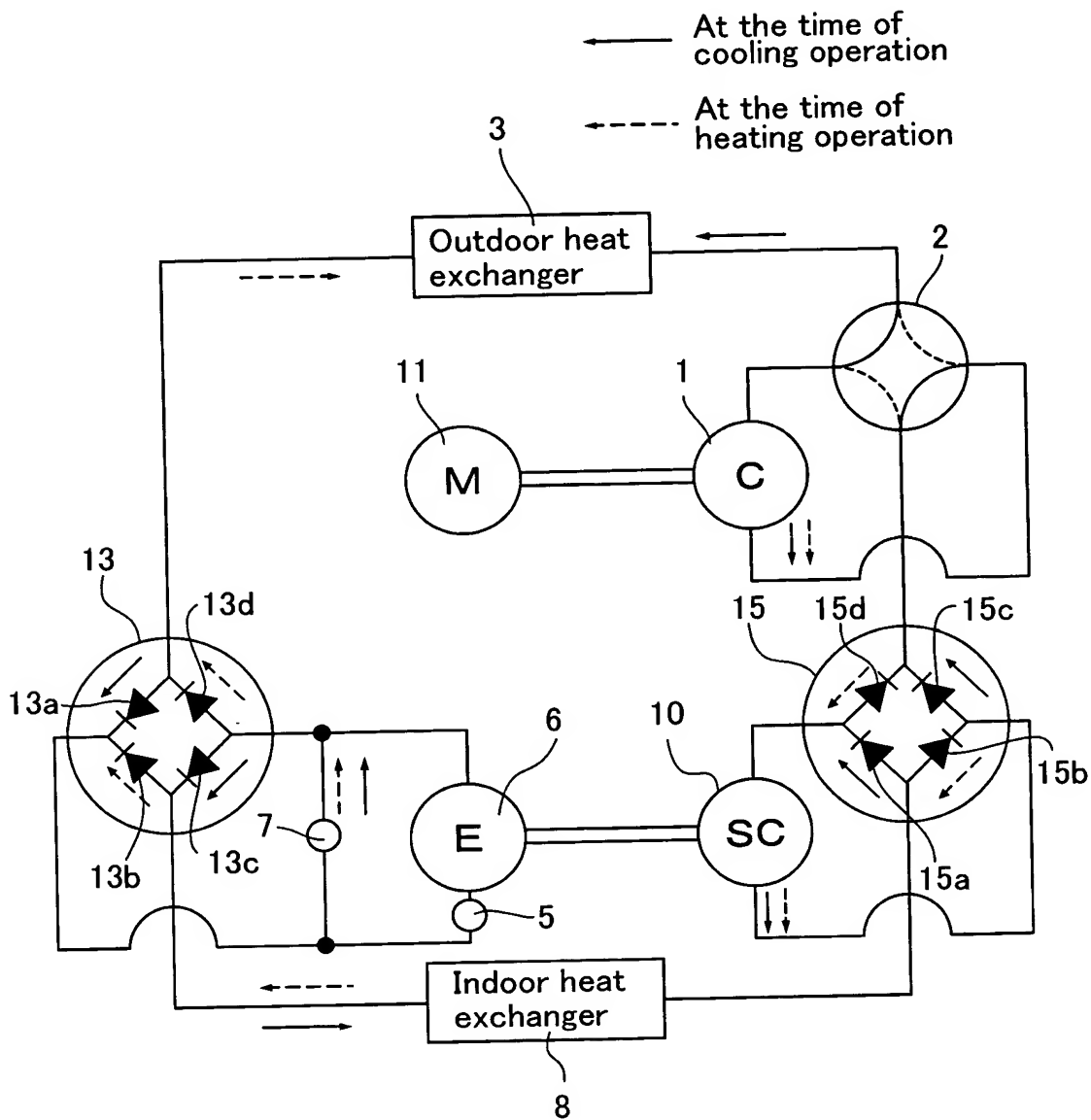


Fig. 3

Fixed density ratio

	At the time of cooling operation		At the time of heating operation	
	Rated operation	1/2 rated operation	Rated operation	1/2 rated operation
Supercharger mode	4.09	3.36	8.50	8.02
Super- pressurizing mode	3 00	2.65	5.99	5.29

	Rated operation	1/2 rated operation	Rated operation	1/2 rated operation
Switching system between supercharger mode and super- pressurizing mode	4.09	3.36	5.99	5.29

Fig. 4

		COP value		
		Present invention	Comparative example	
		Switching system between supercharger mode and super-pressurizing mode	Bypass valve and pre-expansion valve system	Electric generator system
At the time of heating operation	Rated operation	5.456	5.302	5.547
	1/2 rated operation	5.672	5.490	5.781
At the time of cooling operation	Rated operation	4.862	4.862	4.504
	1/2 rated operation	5.089	5.089	4.943
Average COP value (rated)		5.159	5.082	5.026

Fig. 5

Frequency range (estimation)		Main compressor frequency	Frequency ratio	Auxiliary compressor frequency
At the time of heating operation	Rated operation	60	0.6545	39.3
	1/2 rated operation	30	0.6131	18.4
At the time of cooling operation	Rated operation	40	1.000	40
	1/2 rated operation	20	0.9824	19.6

Fig. 6

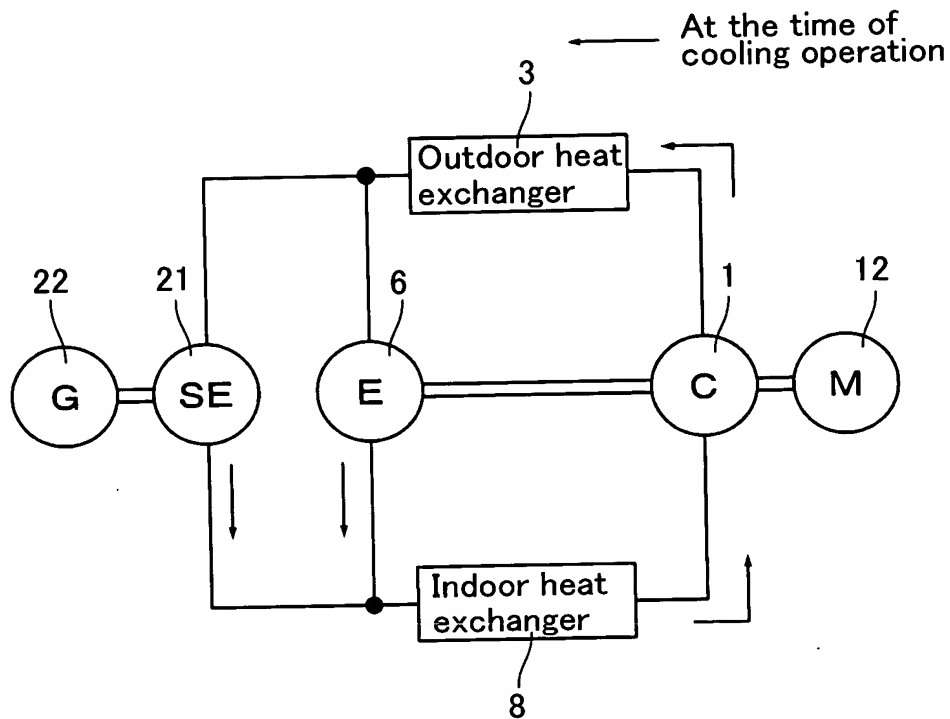


Fig. 7

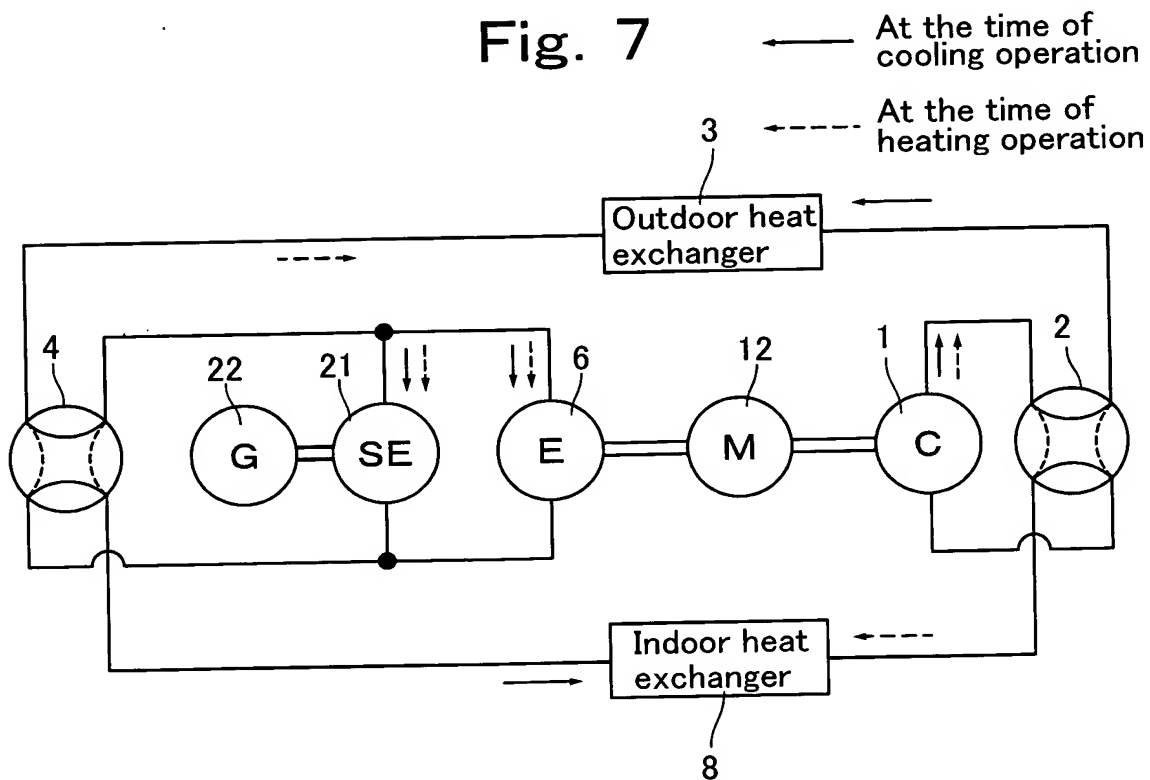


Fig. 8

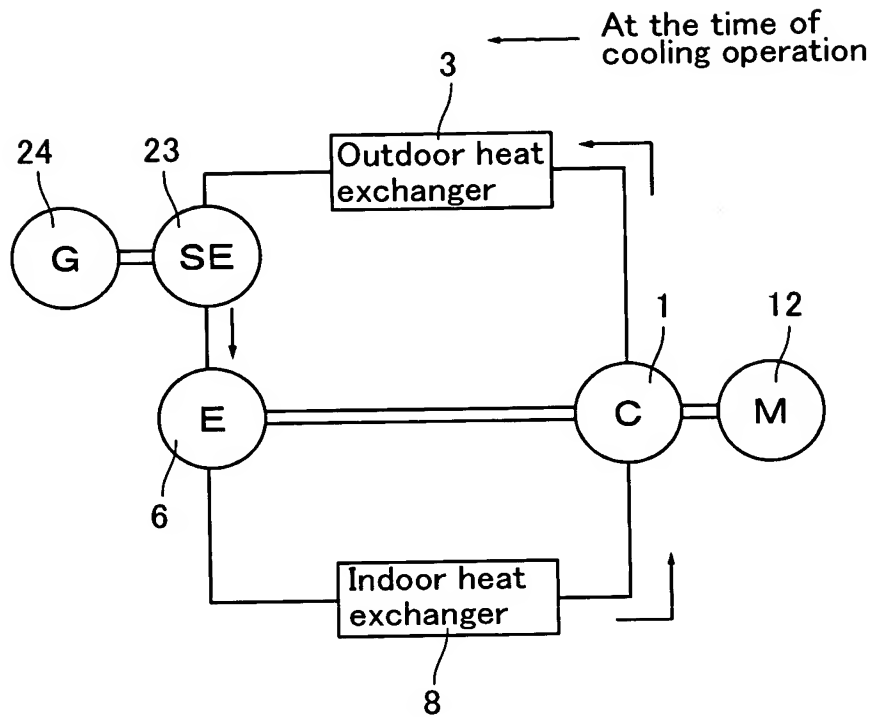


Fig. 9

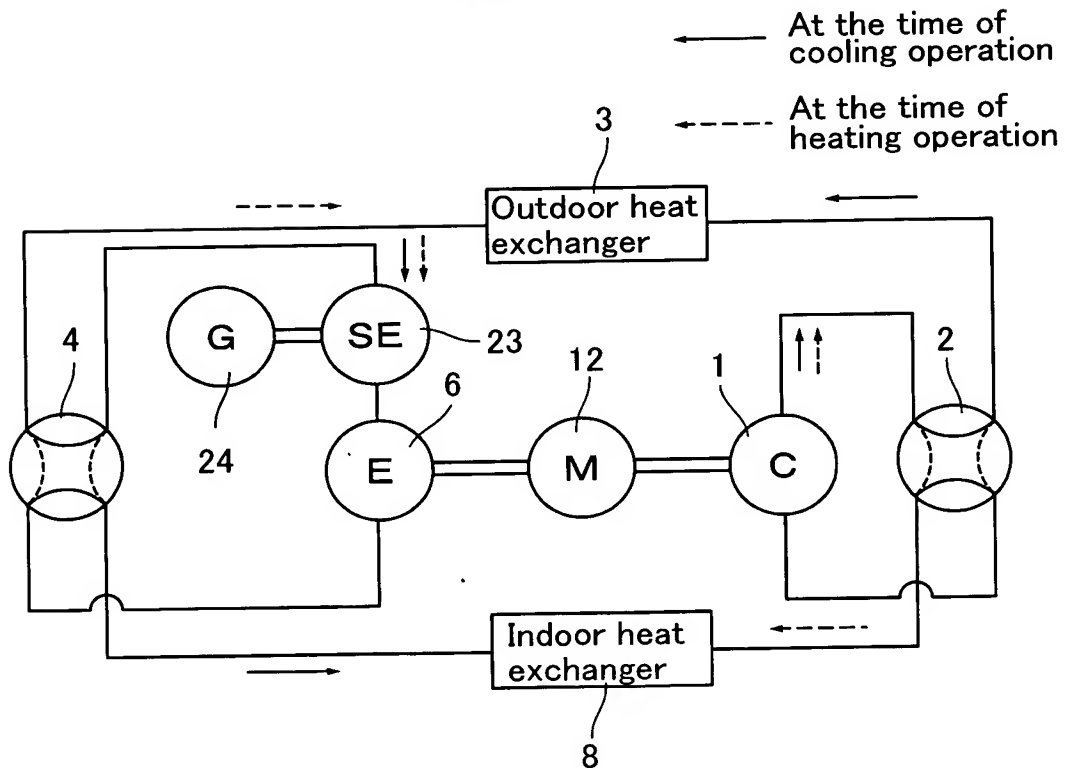


Fig. 12

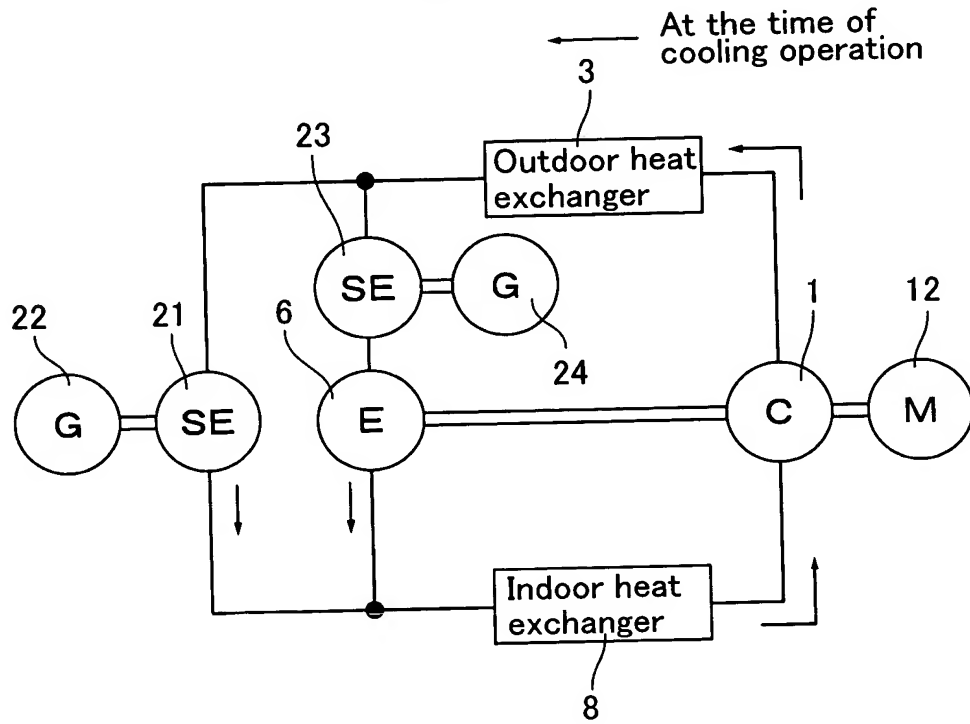


Fig. 13

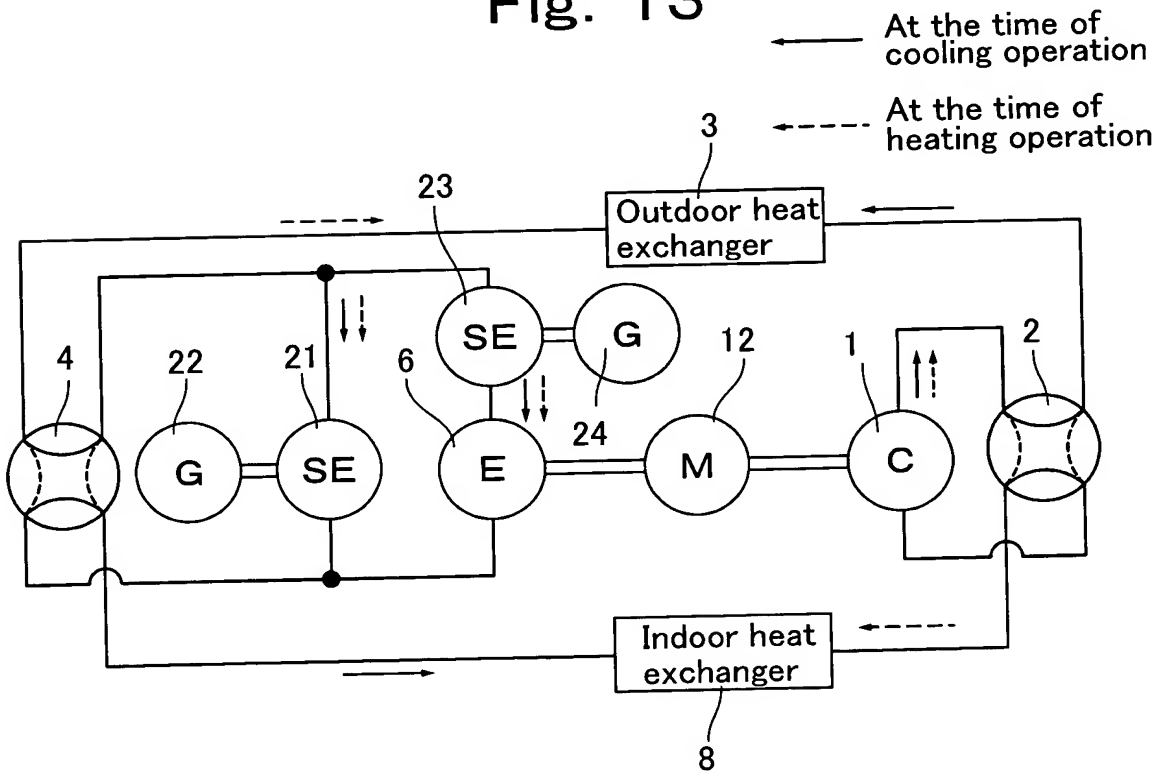


Fig. 14

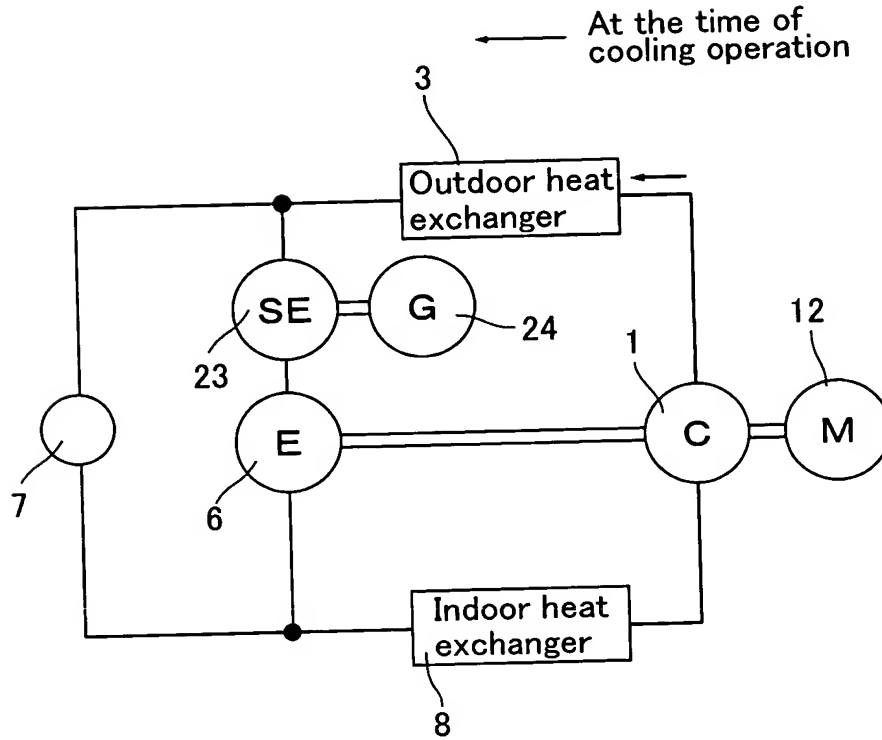


Fig. 15

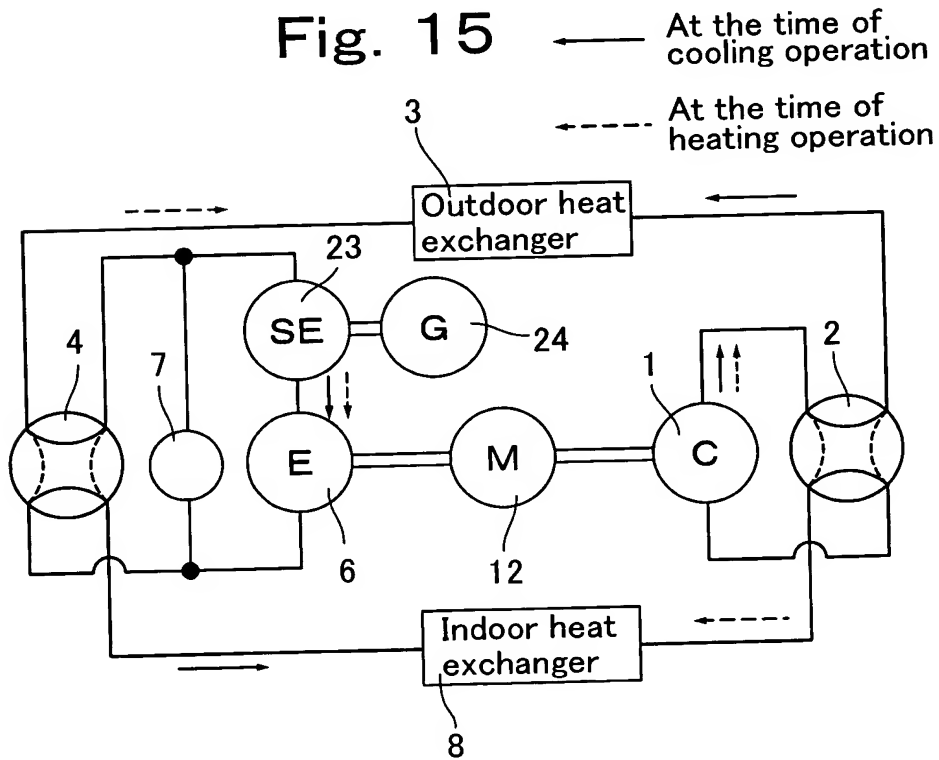


Fig. 16

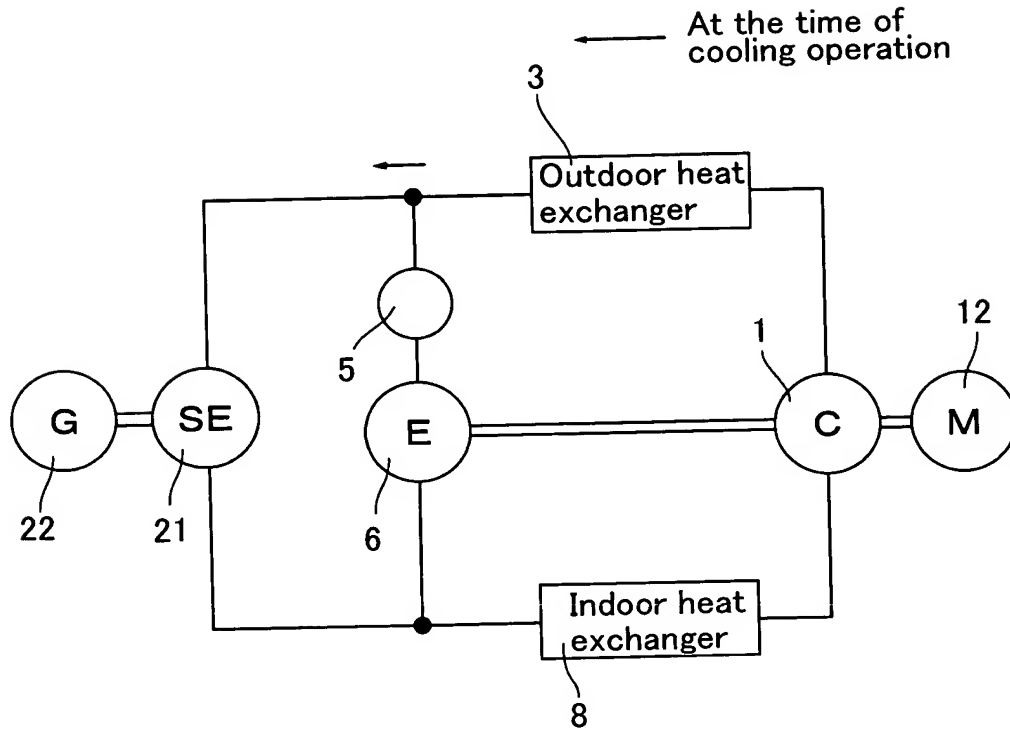


Fig. 17

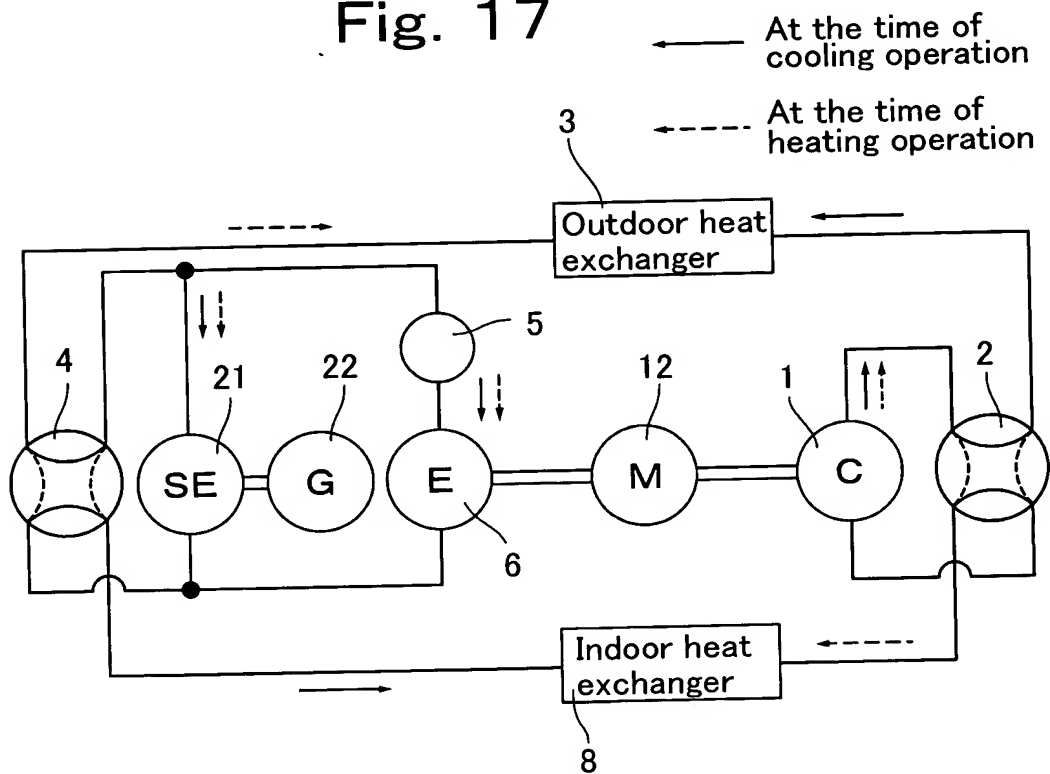


Fig. 18

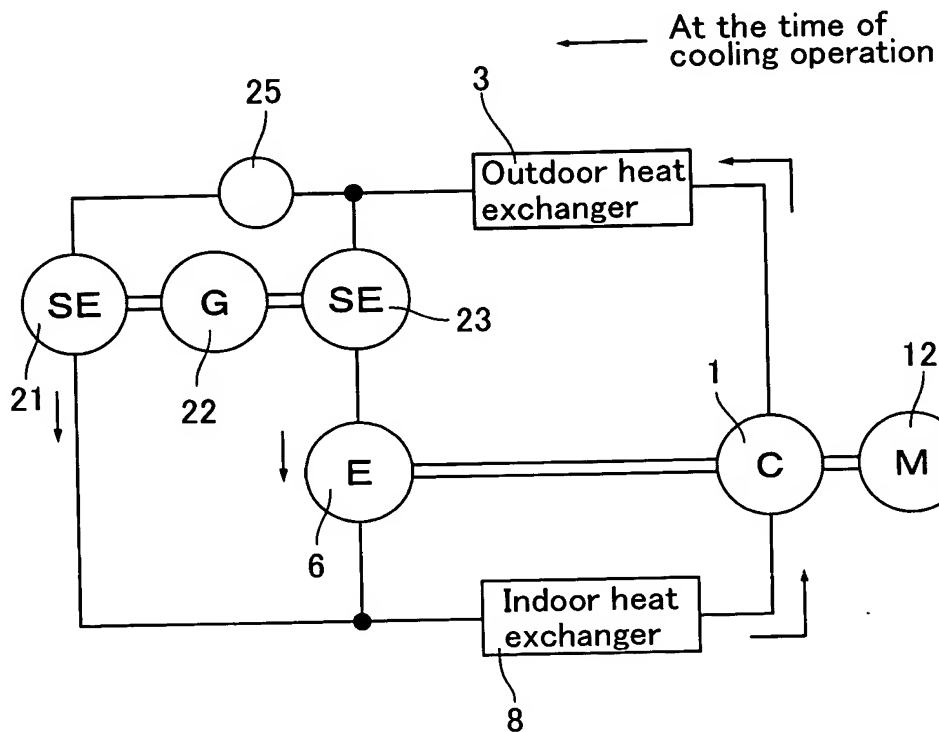


Fig. 19

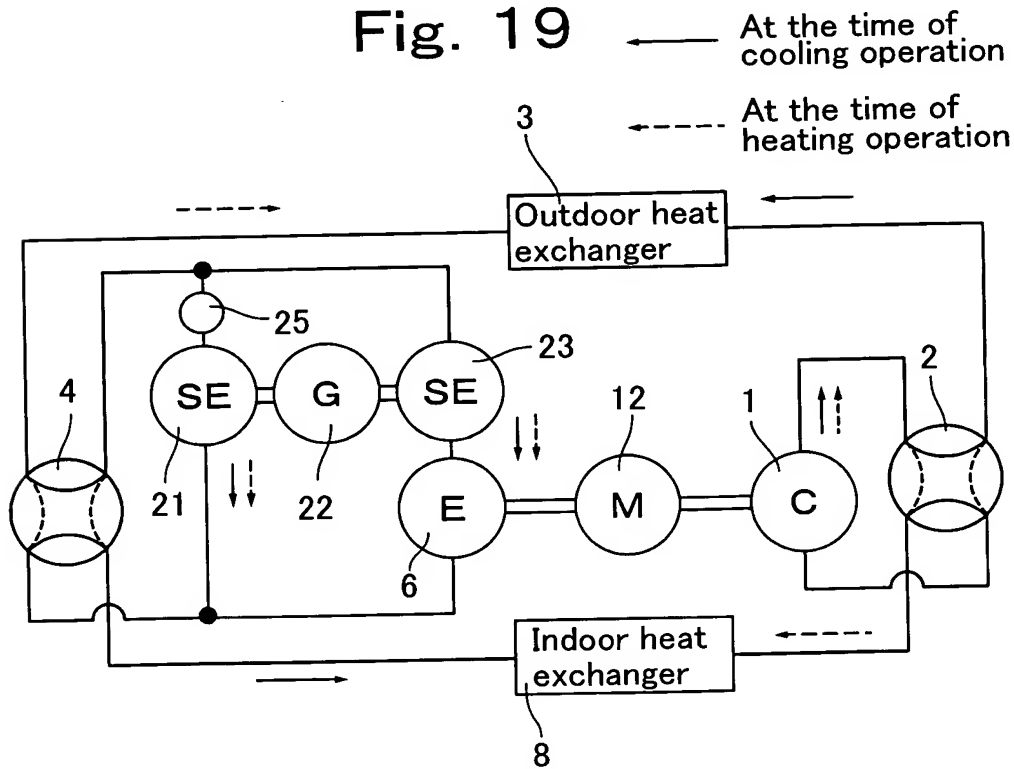


Fig. 20

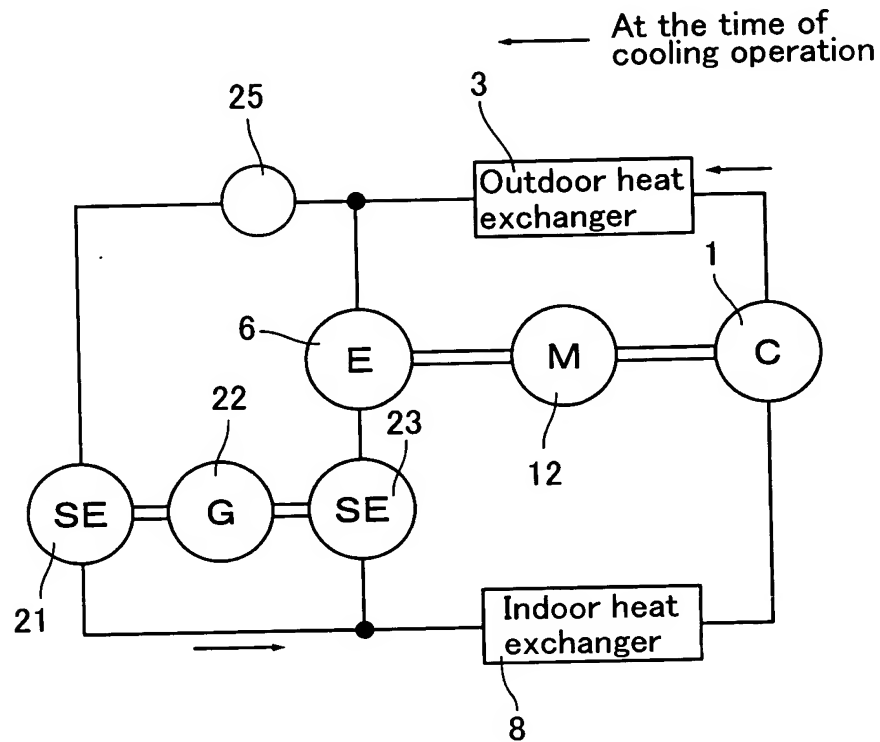


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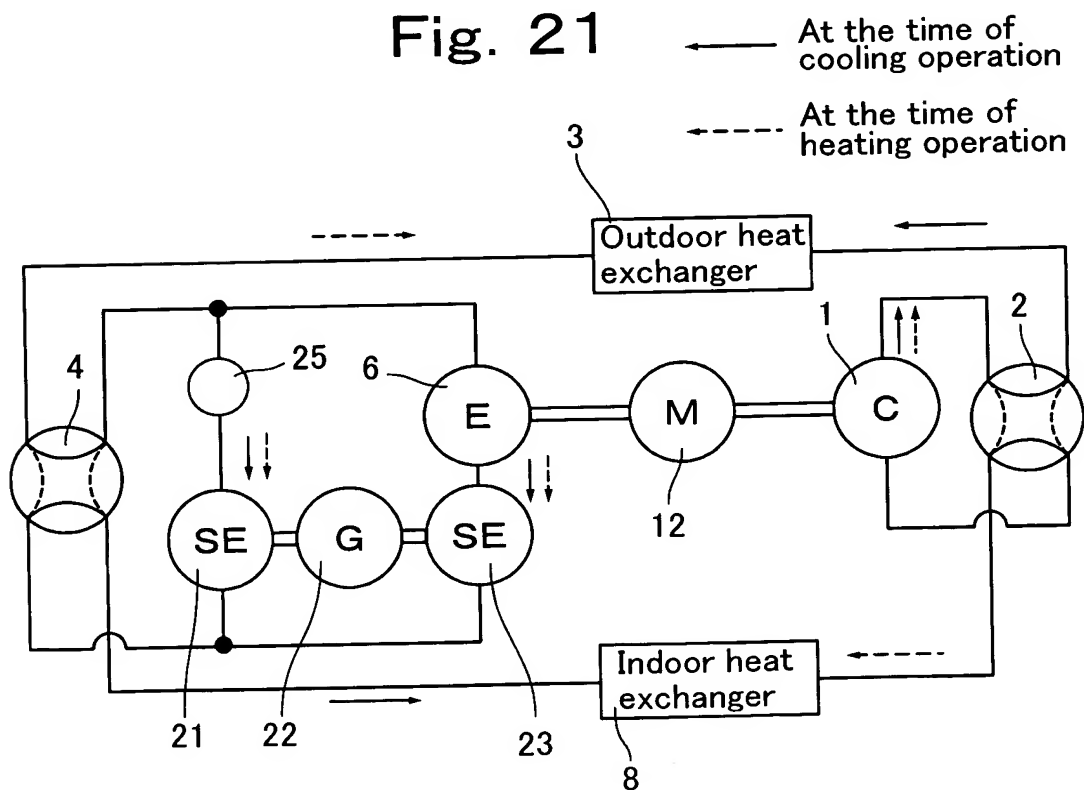


Fig. 22

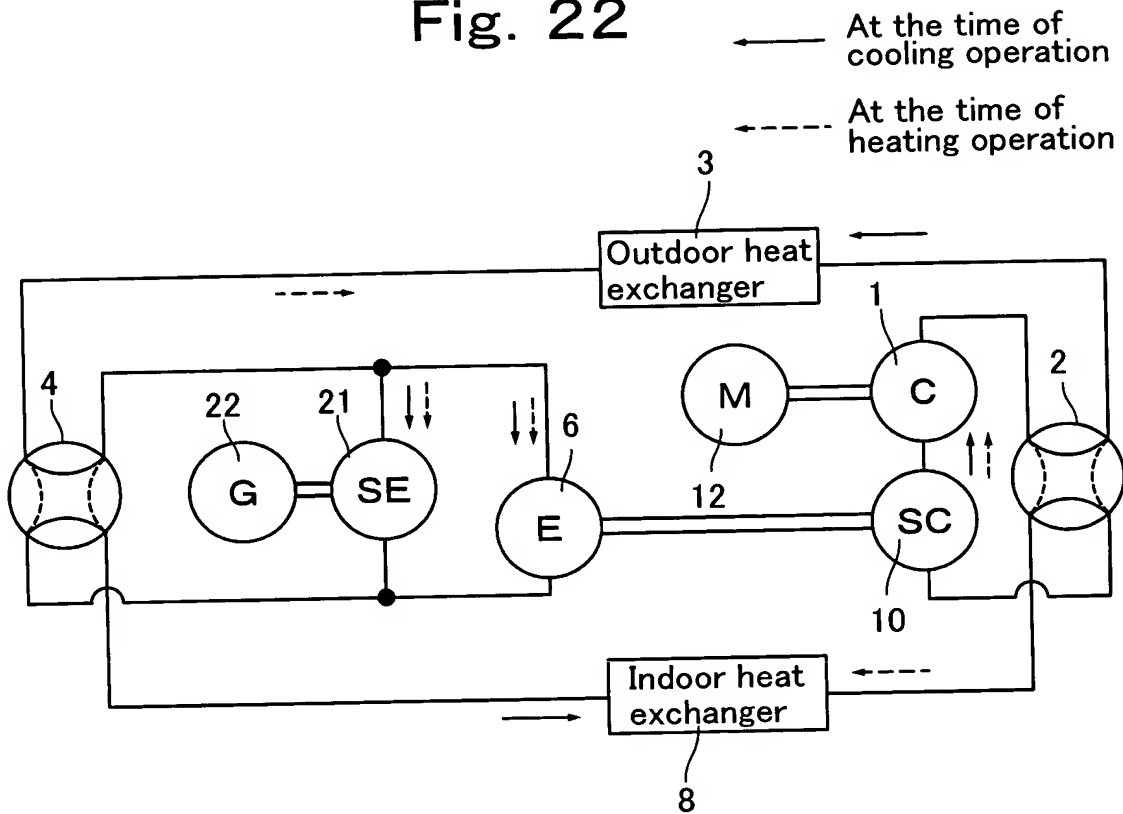


Fig. 23

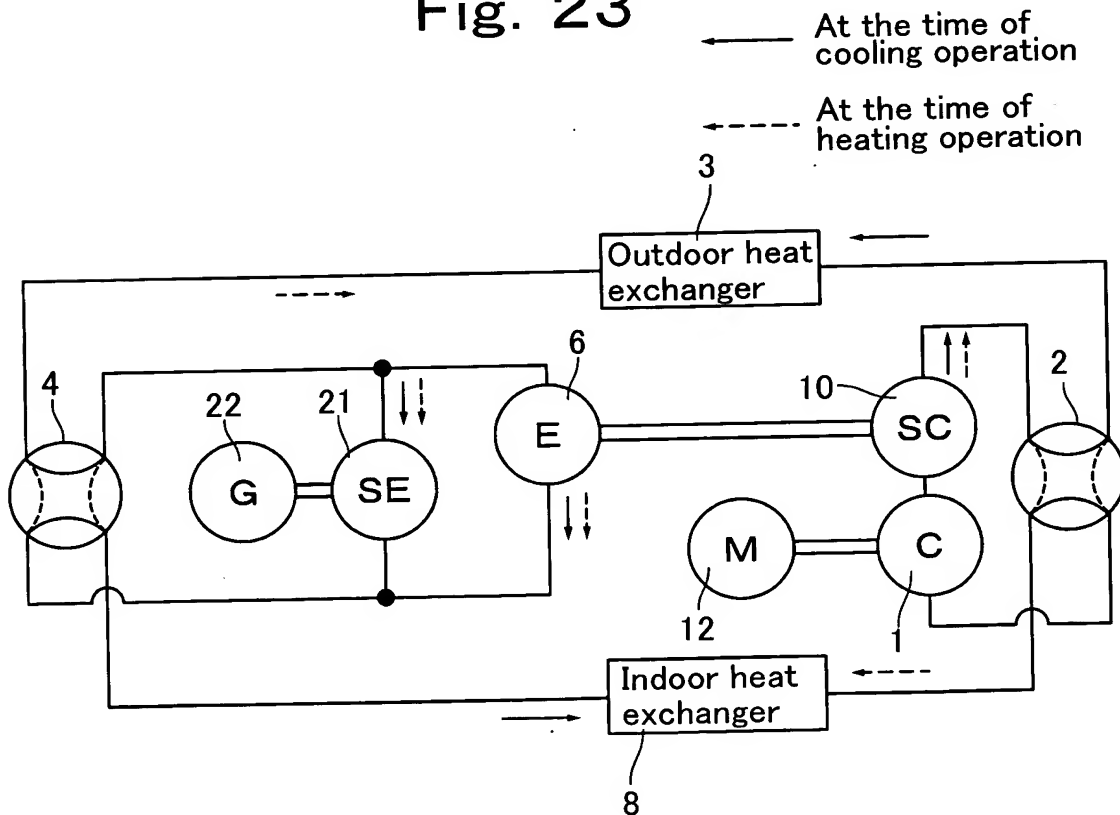


Fig. 24

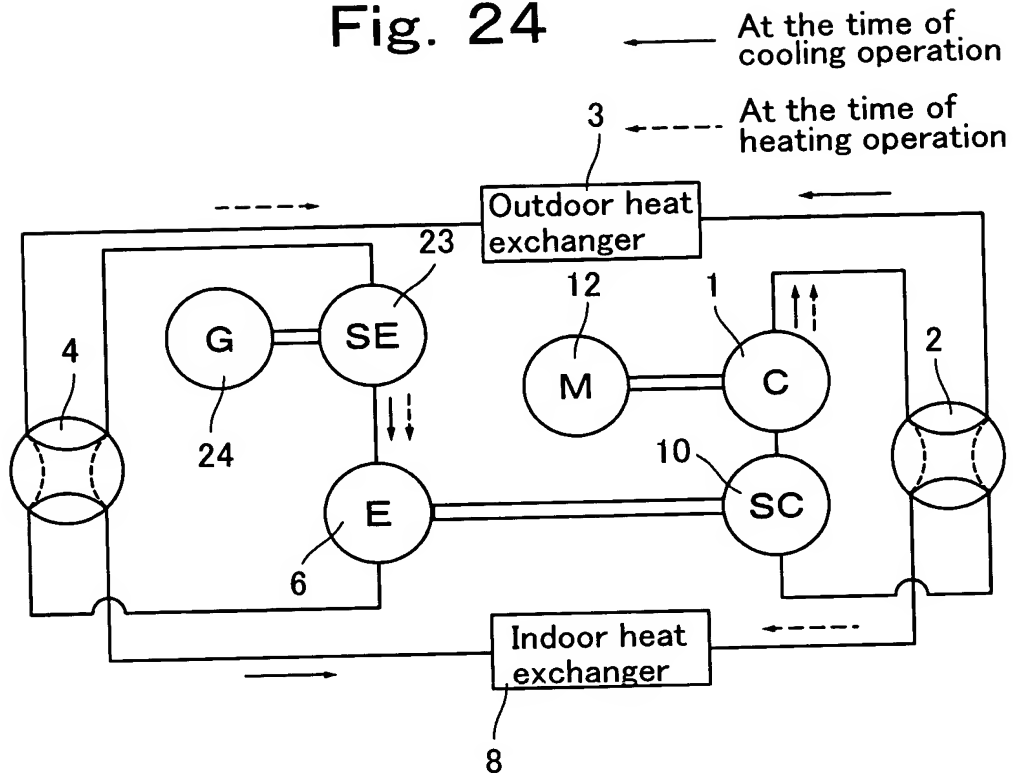
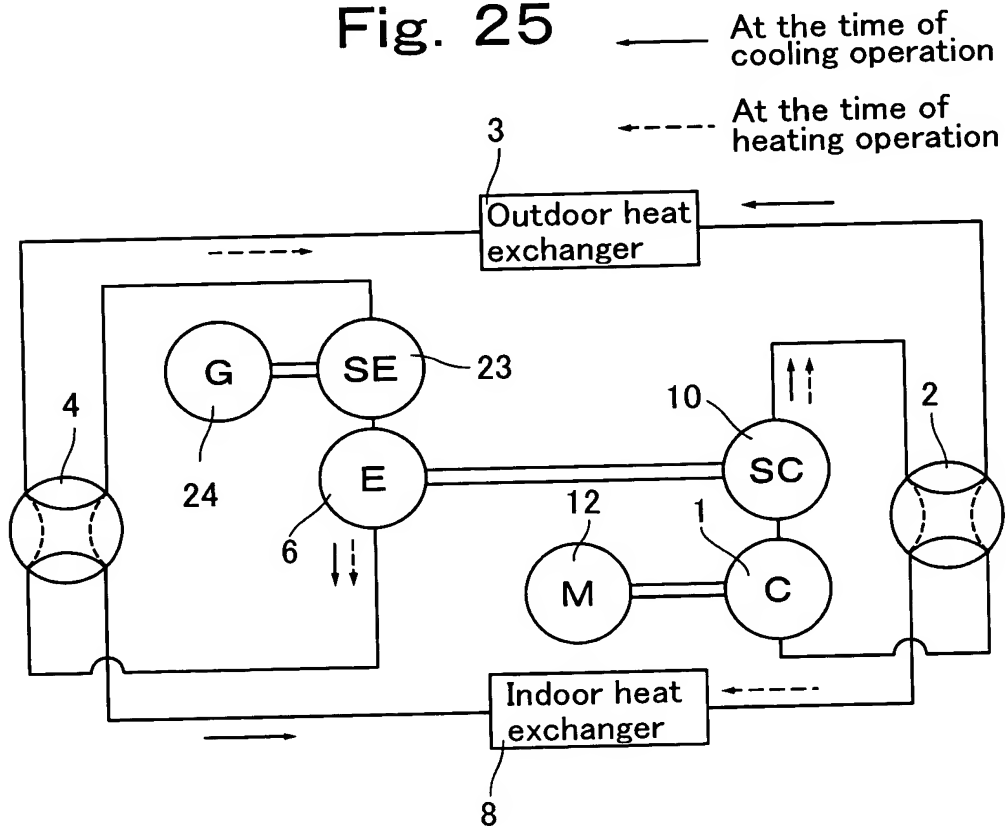


Fig. 25



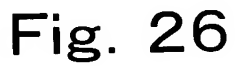


Fig. 28

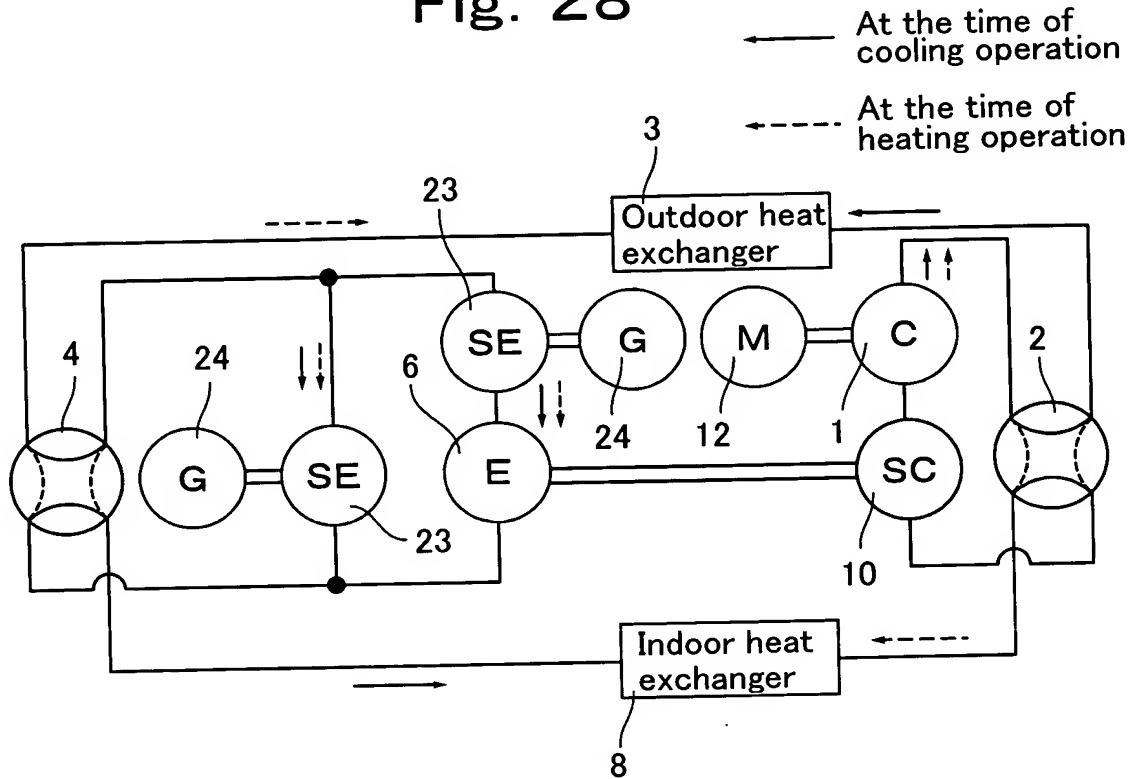


Fig. 29

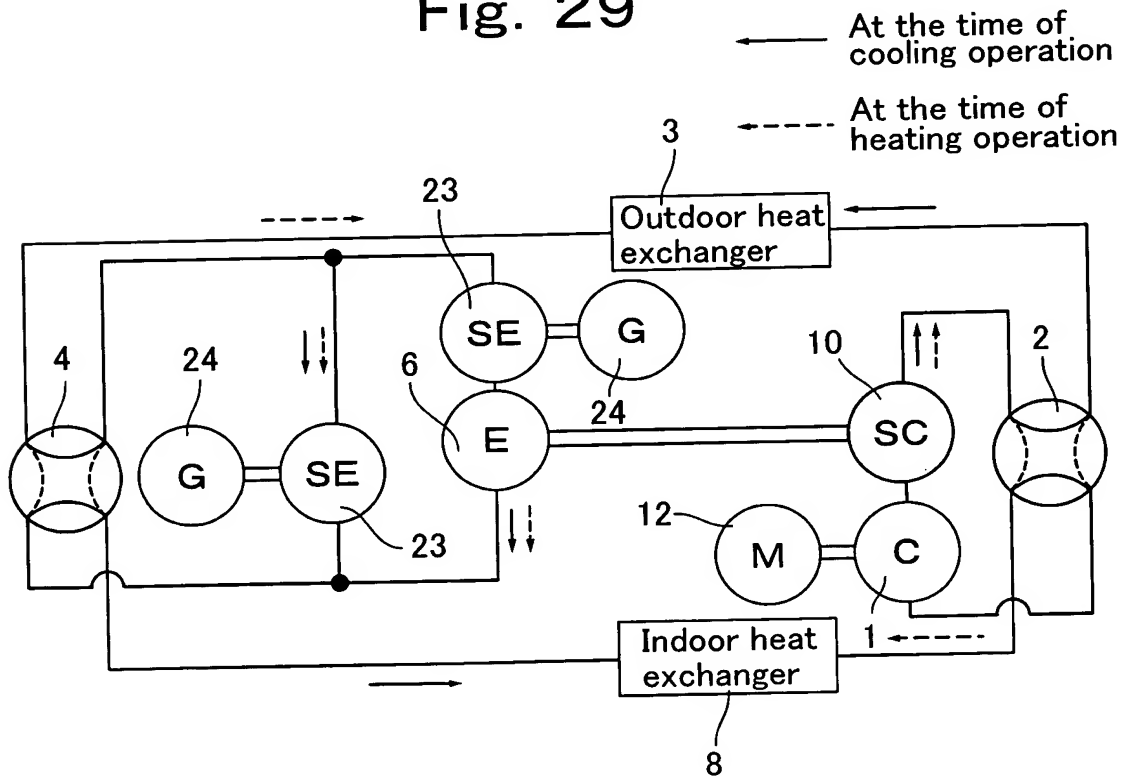


Fig. 30

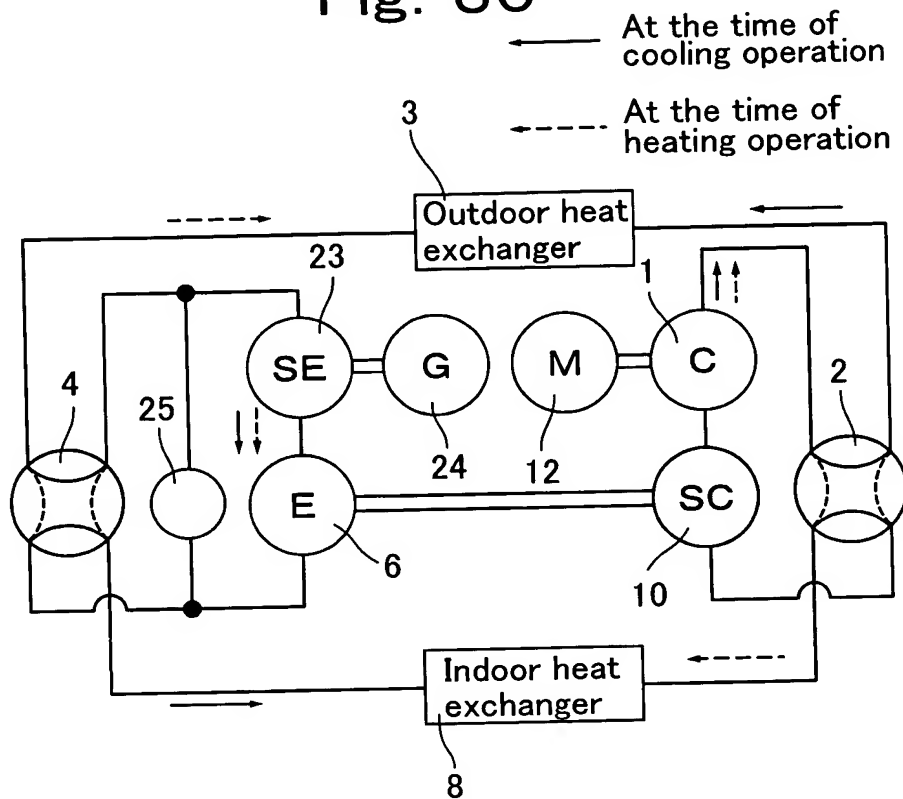


Fig. 31

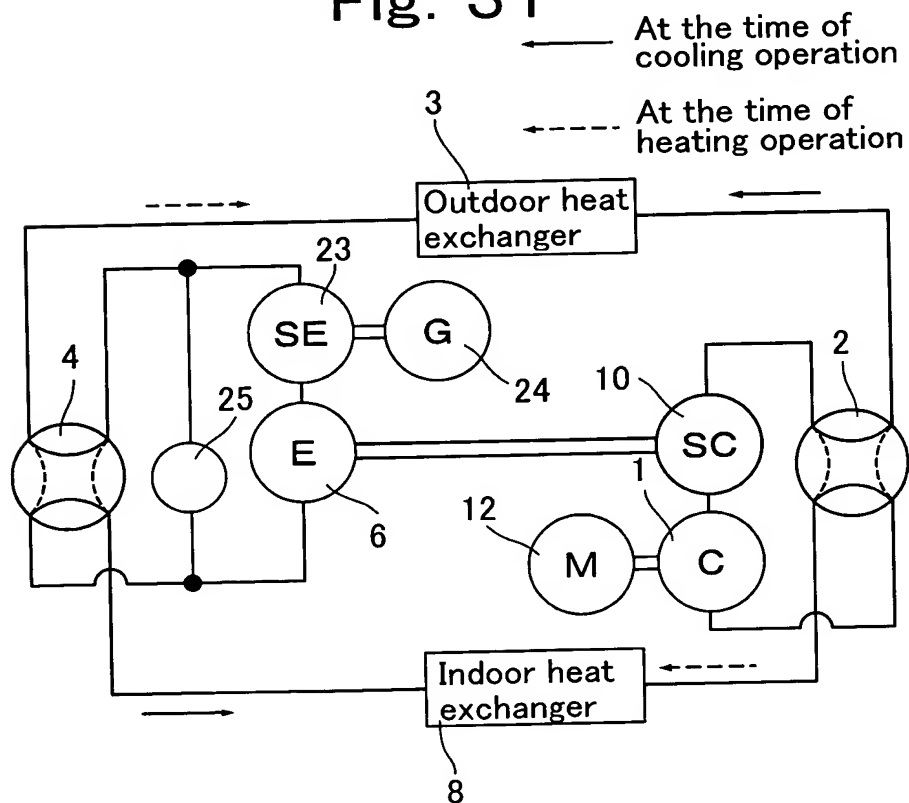


Fig. 32

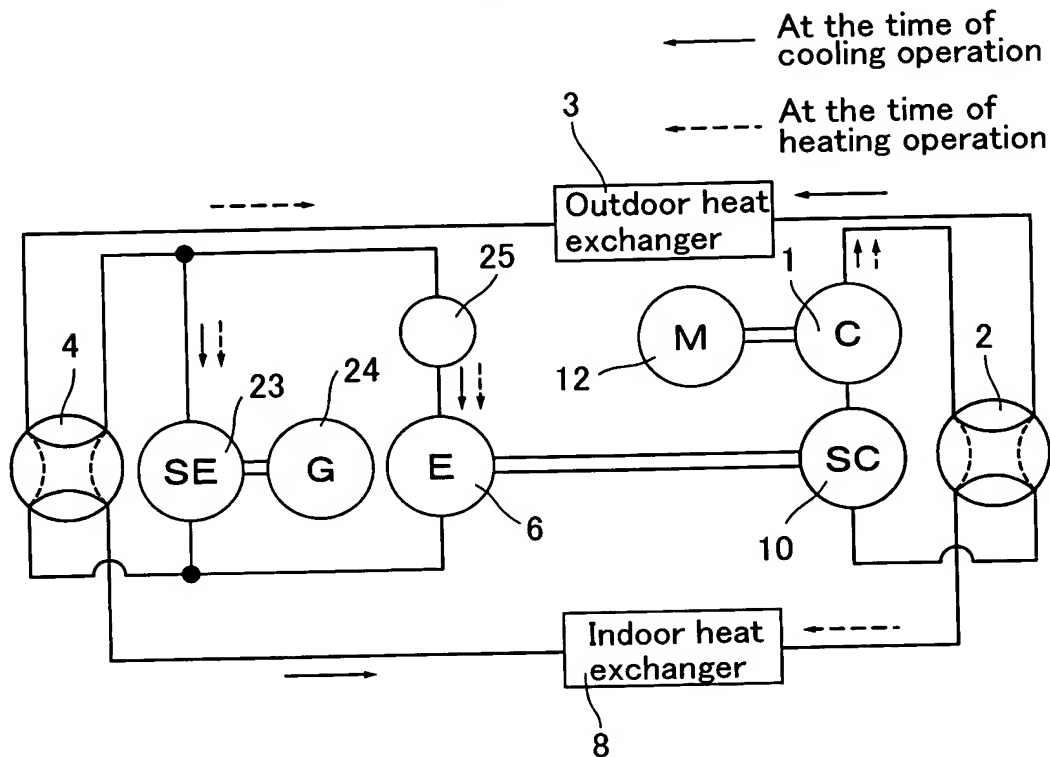


Fig. 33

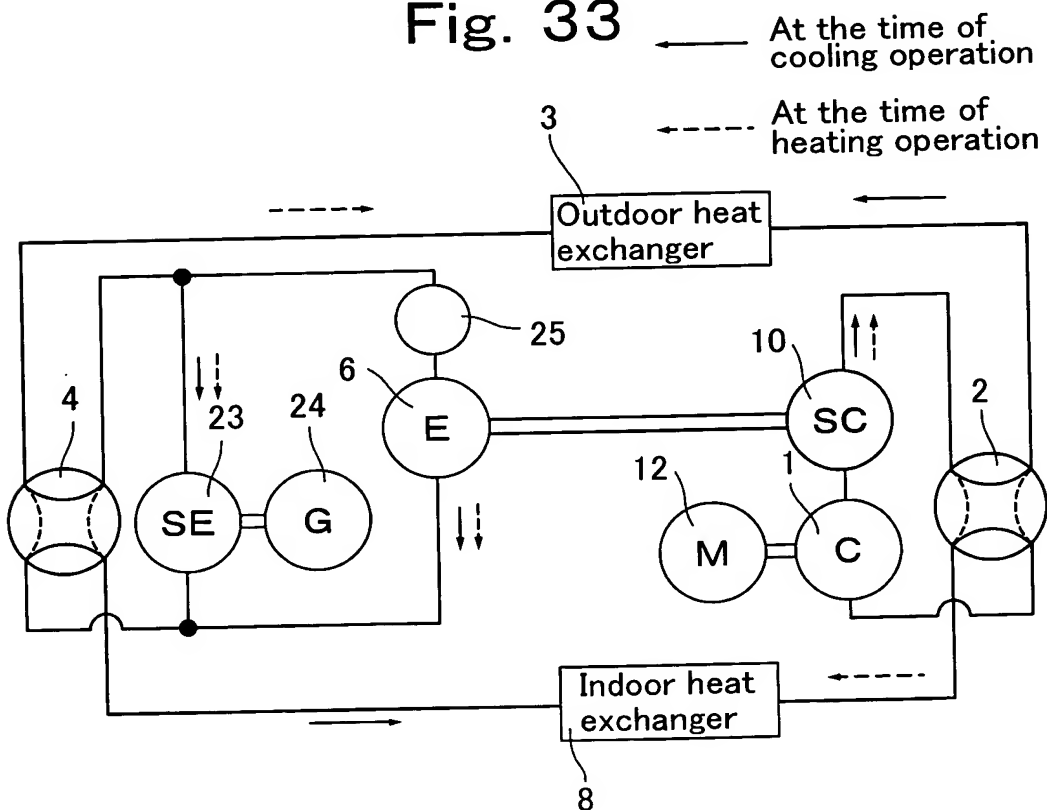


Fig. 34

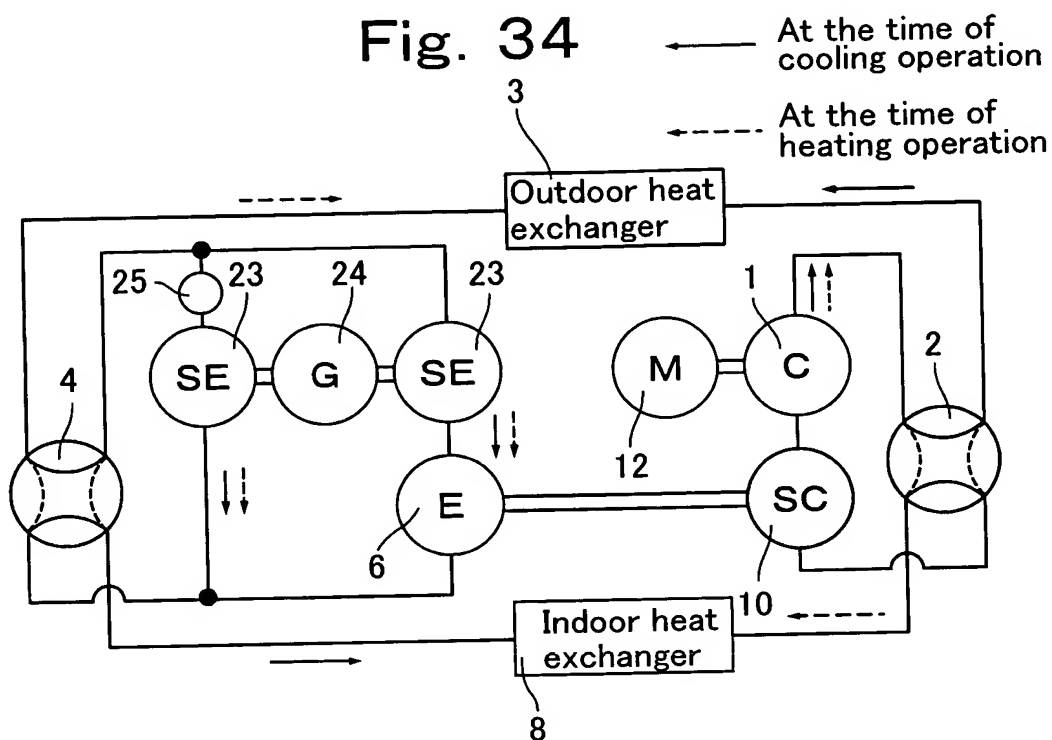


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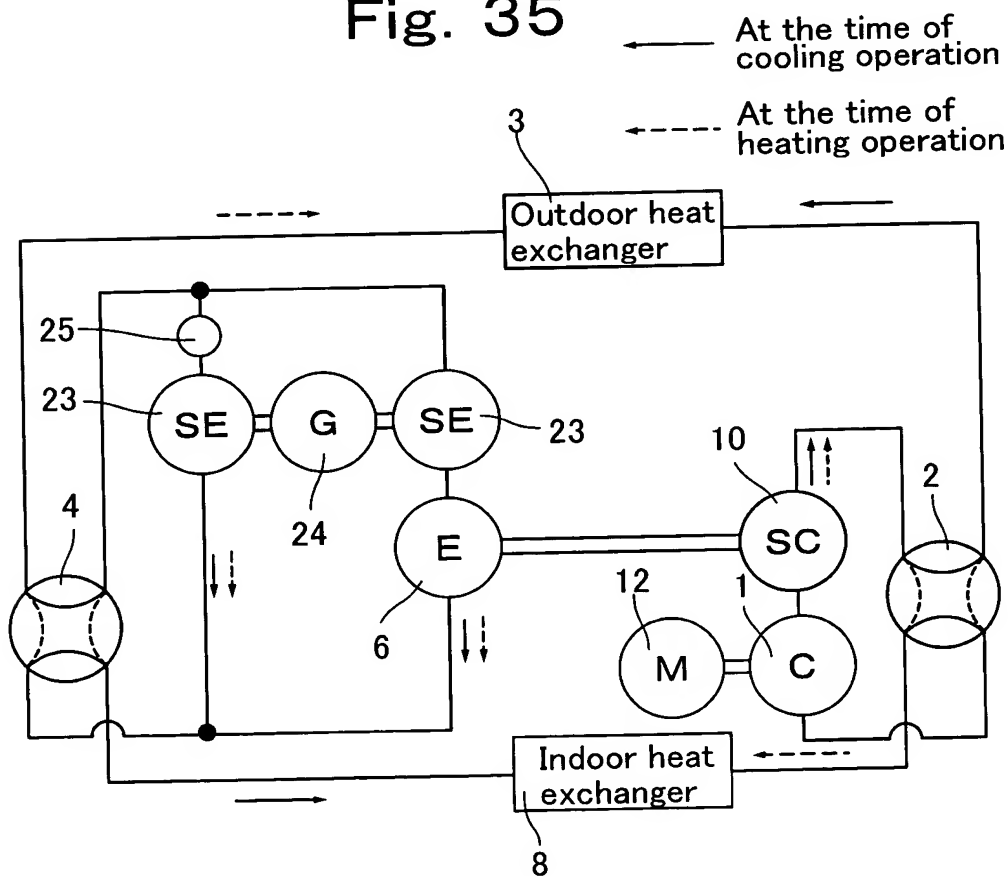


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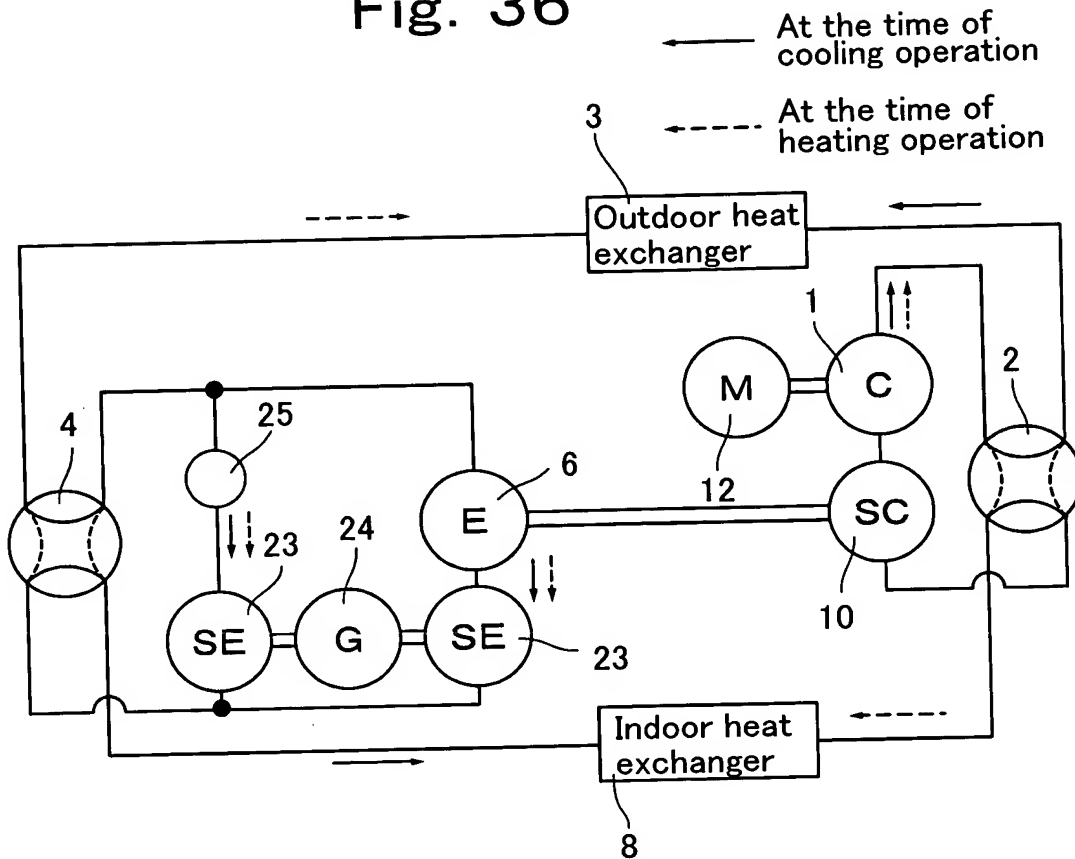


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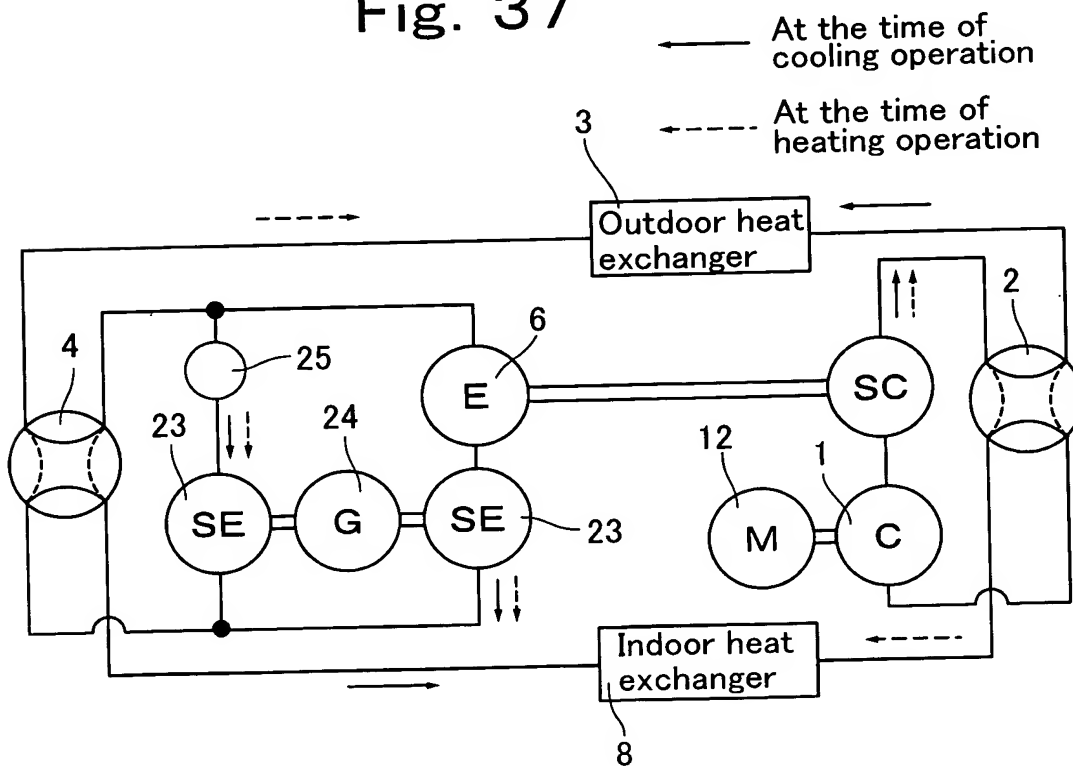


Fig. 38

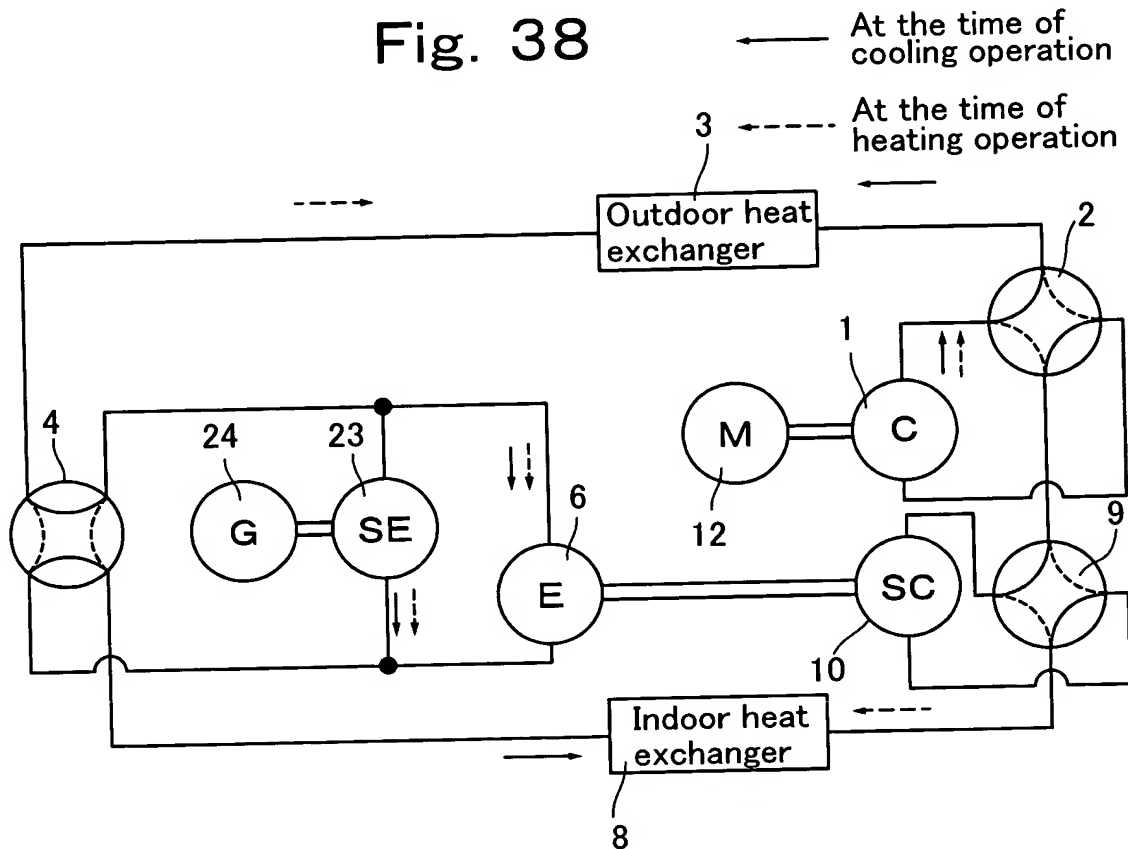


Fig. 39

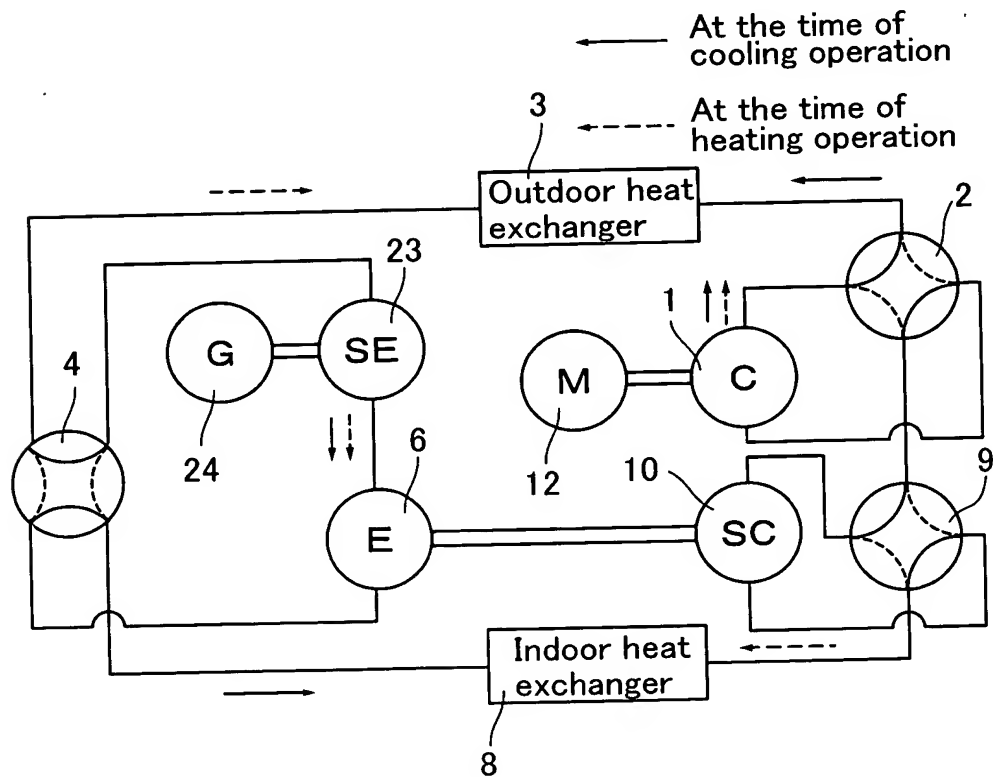


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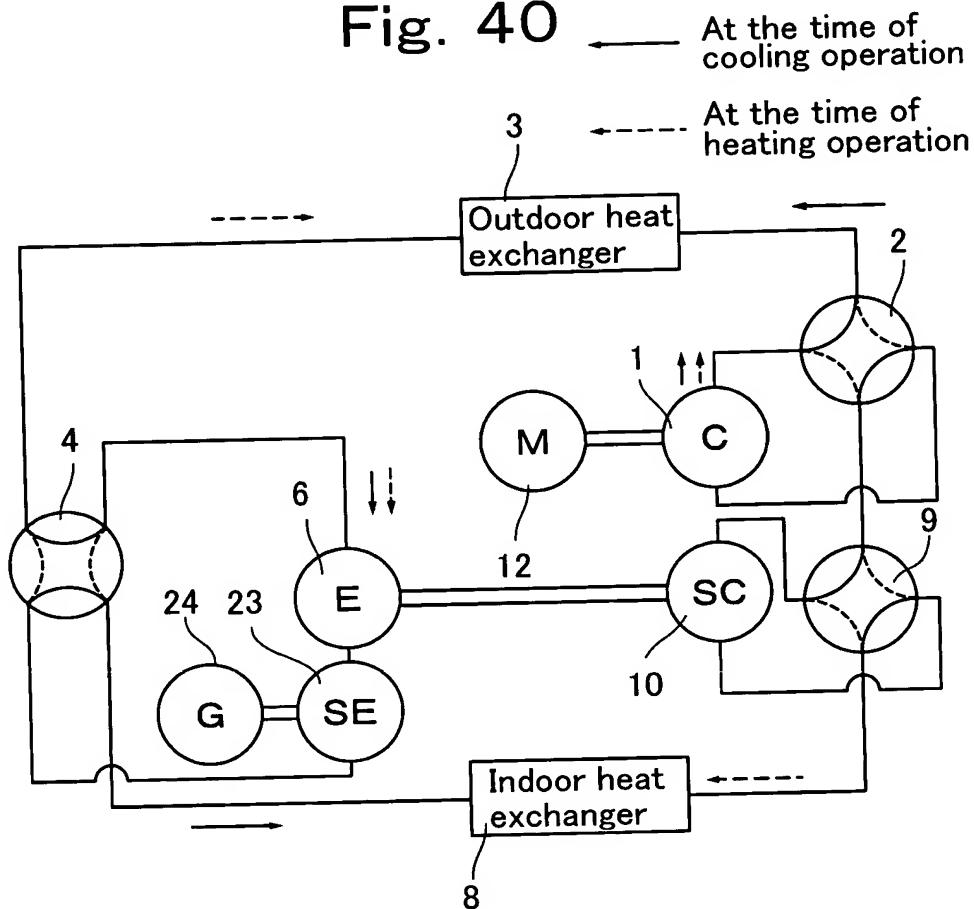


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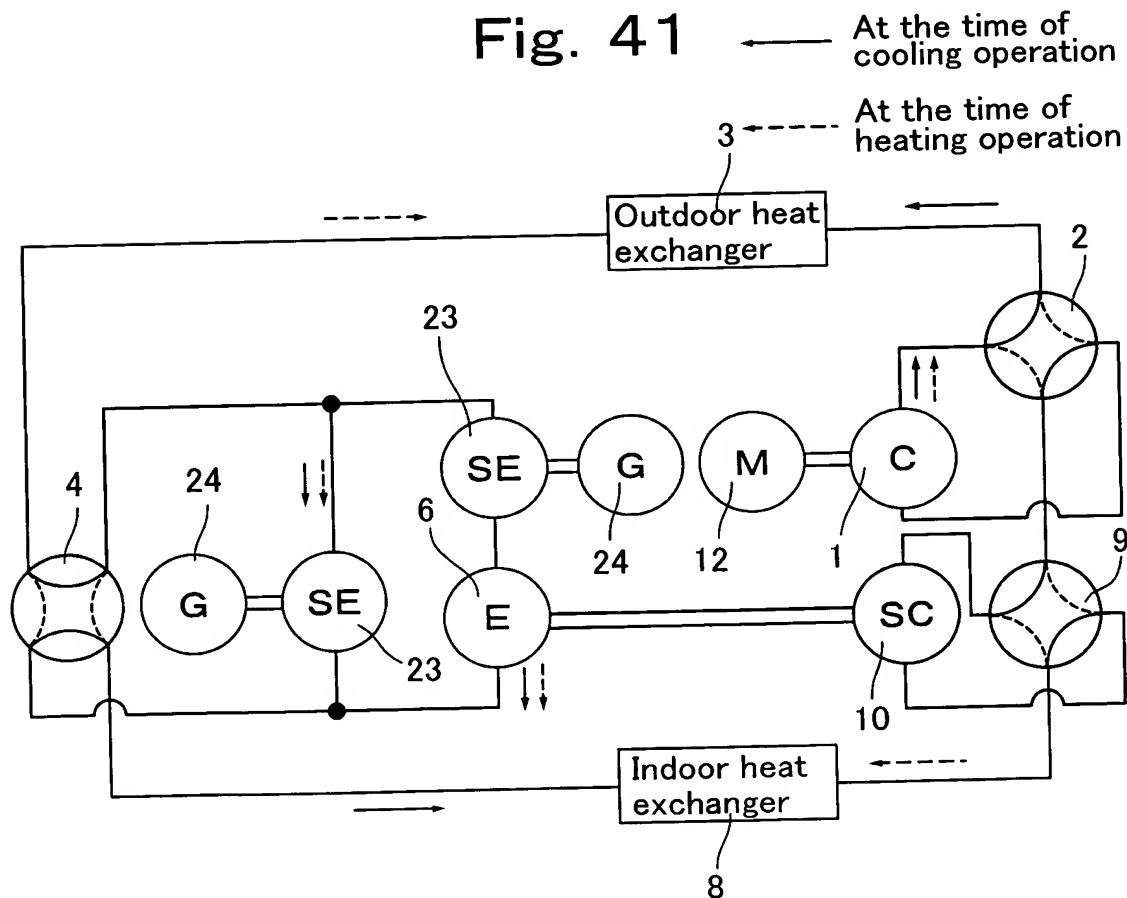


Fig. 42

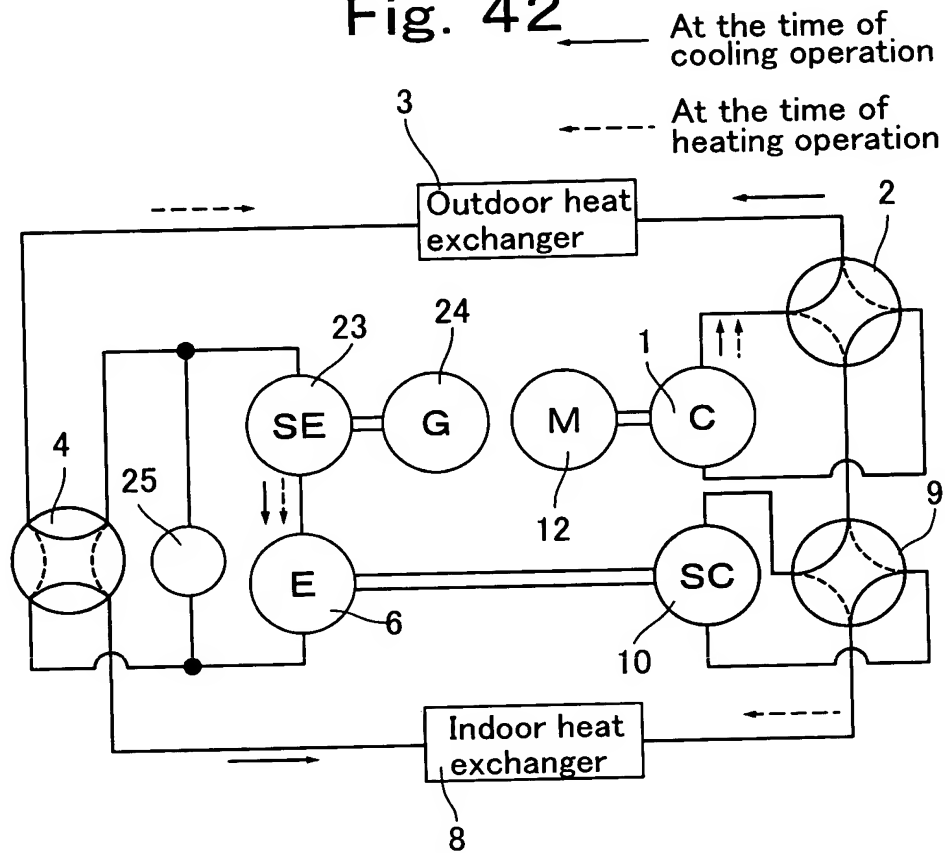


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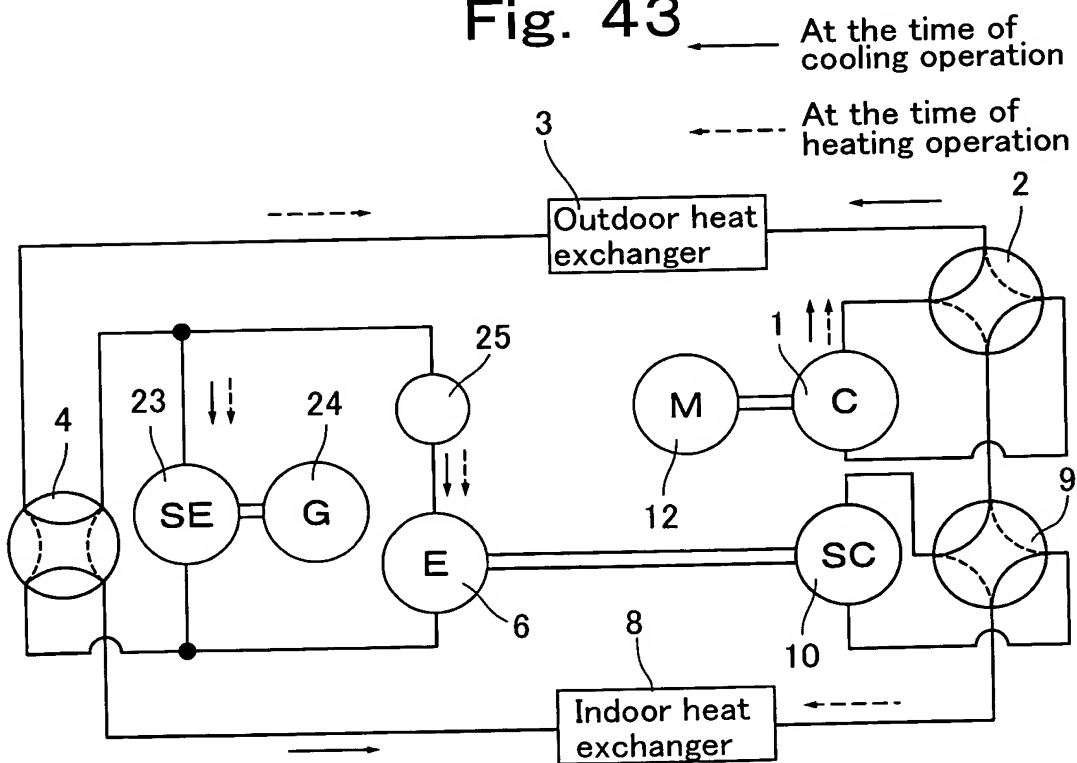


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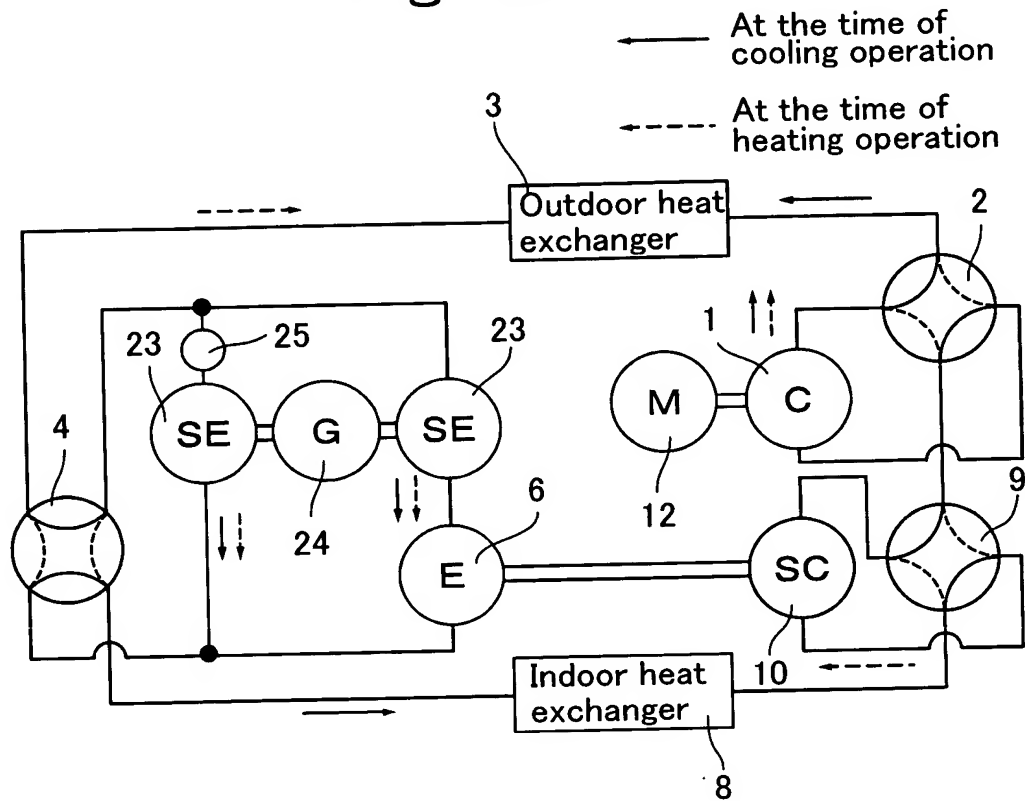


Fig. 45

